The invention in which an exclusive right is claimed is defined by the following:

1. A method for collecting surface plasmon resonance (SPR) spectra of an object in flow, where the object has a metal film capable of exhibiting SPR, comprising the steps of:

(a) introducing the object into a fluid;

(b) introducing the fluid containing the object into a flow imaging system;

(c) collecting spectral SPR data corresponding to the object, the spectral SPR data including at least one of:

(i) an entire angular spectrum corresponding to the object; and

(ii) an entire wavelength spectrum corresponding to the object.

2. A method for collecting data corresponding to interactions between a first type of molecule and a second type of molecule using surface plasmon resonance (SPR) spectra, comprising the steps of:

(a) providing a plurality of objects including a metal film capable of exhibiting SPR;

(b) functionalizing each object in the plurality of objects by attaching at least one molecule of the first type to the object, wherein the first type of molecule is selected because said first type of molecule preferentially interacts with the second type of molecule;

(c) introducing the objects that have been functionalized into a fluid;

(d) introducing a plurality of molecules of the second type into the fluid, such that an association phase is initiated;

(e) introducing the fluid containing the objects that have been functionalized and the plurality of molecules of the second type into a flow imaging instrument capable of collecting SPR spectral data; and

(f) using the flow imaging instrument to collect SPR spectral data from individual objects passing through the flow imaging instrument.

3. The method of Claim 2, wherein the step of introducing the fluid into the flow imaging instrument comprises the steps of:

(a) determining a length of an association period for the fluid;

(b) introducing the fluid into the flow imaging system at a substantially constant rate for substantially the length of the association period.

4. The method of Claim 2, wherein the step of introducing the fluid into a flow imaging instrument comprises the step of introducing a first portion of the fluid into the flow imaging instrument, such that a second portion of the fluid remains.

5. The method of Claim 4, further comprising the steps of:

(a) determining a length of an association period for the fluid; and

(b) after the association period has expired, adding a buffer solution to the second portion of the fluid, the buffer solution having been selected to induce disassociation of molecules of the second type that are bound to molecules of the first type;

(c) introducing the second portion of the fluid with the buffer solution into a flow imaging instrument capable of collecting SPR spectral data; and

(d) using the flow imaging instrument to collect SPR spectral data from individual objects in the second portion of the fluid as the objects pass through the flow imaging instrument.

6. The method of Claim 5, wherein after the association period has expired, and before adding the buffer solution to the second portion, further comprising the steps of:

(a) processing the second portion of the fluid to separate the second portion of the fluid into a concentrated solution of objects and a supernatant; and

(b) removing the supernatant from the second portion of the fluid that was processed.

7. The method of Claim 2, further comprising the steps of:

(a) collecting the objects after they have passed through the flow imaging system; and

(b) rinsing the objects that were collected in an acid rinse, to remove any molecules of the second type that remain bound to the molecules of the first type, so that the objects that were collected and rinsed can be reused.